ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

REPORT OF INTEGRATED SAFETY MANAGEMENT SYSTEM VERIFICATION

Phase I
&
Phase II

Final Report

JANUARY 1998

I, by signature here, acknowledge that I concur with the TEAM LEADER in the findings, conclusions, and recommendations of this report of the Integrated Safety Management System Verification in my assigned functional area.

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EXECUTIVE SUMMARY

In support of the Department of Energy's commitment to the safe accomplishment of mission as stated in its Safety Management Policy, the Rocky Flats Field Office (RFFO) Manager has required Kaiser-Hill (K-H) to describe its Integrated Safety Management System (ISMS) for the Site.

This report documents the results of RFFO's integrated safety management system verification (ISMSV) conducted December 8-11, 1997, and January 12-23, 1998 to review the K-H Team's safety management process. This verification covered both Phase I (evaluation of the ISMS description and manuals of practice) and Phase II (assessment of implementation in Buildings 371 and 664). The verification was consistent with the Under Secretary's Review and Approval Protocol and the RFFO Manager's amplifying direction.

The current activities and facilities at the Site are safely operating under various authorization bases. Start up of new activities occurs only after completing the appropriate readiness determination process based on the activities' hazards. The purpose of this verification was to ascertain the presence of the described ISMS processes of integrated management of safety. The deficiencies noted relate to those integration processes and not to Site operations currently ongoing.

CONCLUSIONS

1. K-H, its subcontractors, and the RFFO management demonstrated a practical understanding of ISMS core functions and guiding principles. Each organization is diligently working toward institutionalization and full implementation of ISMS. Many of the required manuals of practice and implementing procedures are in place. A number of documents have recently been revised or developed to support implementation of ISMS at the Site.

2. RFFO has undergone a re-alignment of responsibilities that enhances the Manager's ability to work effectively with the K-H team, Headquarters, and other stakeholders in closing the Site safely. A concern is the failure to negotiate an appropriate set of standards and requirements into the contract.

3. Many of the mechanisms required to safely perform the mission of Site closure are in the process of being formalized; these include Integrated Work Control Process (IWCP), Enhanced Work Planning (EWP), and Job Hazard Analysis (JHA). In many cases, the mechanisms or practices have evolved informally. Management emphasis is needed to improve the conduct and documentation of these practices.

4. Many documents which identify the roles and responsibilities for personnel within K-H as well as the sub-contractors are not current or do not reflect current organizations. In addition, many positions which are important to safe operations within the Site do not have current descriptions of required competencies.

5. The ISMSV Team concluded that there are a number of deficiencies with the ISMS Manual. The principle one is that integration of the Activity Definition Process (ADP), the Activity Control Envelope (ACE) and various hazard analysis methods is unclear. Due in part to these ISMS Manual deficiencies, along with deficiencies in the implementing procedures, ISMS is not fully implemented in Buildings 371 and 664. Further, there are specific findings against Building 371 regarding the implementation of the Safety Management Programs identified in the Basis for Interim Operation, conduct of pre-evolution briefings, and the adequacy of hazard analysis and control development for individual work activities.

NOTEWORTHY PRACTICES

- The Personal Safety Plan, an initiative of the President of K-H for his direct reports and the first tier subcontractors, serves as a key safety awareness and individual commitment tool. Since these are closely linked to the personnel appraisal process, these plans serve as a key ISMS implementation and feedback mechanism.
- The maintenance reengineering efforts by SSOC for Building 771 and the joint organization of SSOC and RMRS in the decommissioning project for Building 779 are noteworthy efforts to meet a changing environment.
- The K-H Building Representative program provides an excellent capability to assure policy is in place and to gain information that will allow appropriate improvements and integration of safety management. This practice may be useful to other Integrating Management Contractors.
- The Site has been very effective in developing an integrated plan to achieve the mission--closing the Site.
- The process for confirming readiness has been expanded beyond the DOE-prescribed nuclear scope to include all Site work.

OPPORTUNITIES FOR IMPROVEMENT

An evaluation of the individual findings has identified the following general subjects which provide opportunities for improvement identified during the ISMS verification.

- Some implementing mechanisms (procedures and processes) for the functions of "Analyze Hazards" and "Develop and Implement Controls" are immature, poorly defined, or not developed and lack integration. A lack of current criteria for assignment to positions of responsibility involving safety was noted. For example, no criteria are specified for personnel who will participate in "Team Based Safety Analysis" activities and other key ISMS positions (Criticality Safety Engineers, Shift Managers, and Building 371 support managers).

- The fact that management at the Site has evolved dynamically is recognized. Nonetheless, the formality in assignment of roles and responsibilities is lacking. This opportunity for improvement was noted in both K-H and first tier subcontractors.

RECOMMENDATIONS

1. That the RFFO Manager approve the ISMS Manual after the following three deficiencies are corrected:
   - The ISMS Manual does not include a clear definition of line management and does not clearly delineate the line management chain of command encompassing K-H and first tier subcontractors.
   - The ISMS Manual does not adequately describe the integration of the many hazards analysis and controls identification processes.

- It is not evident in the ISMS Manual what process WSLLC and DCI use to determine the method of hazards analysis commensurate with the risk.

2. That the ADP and hazard analysis tool implementing procedures be revised within 60 days to correct the following deficiencies:
   - For other than hazards analysis performed for Authorization Bases (AB) documents in accordance with DOE O 5480.23 and .21:
     - ⇒ there is no assurance that hazards are analyzed and controls identified commensurate with the risk for a proposed activity
     - ⇒ that activities outside but in the vicinity of hazard category 2 and 3 facilities are reviewed for impact to the facility or Site AB
     - ⇒ that an appropriate change control process is required to assess impacts to controls identified in the hazards analysis.
3. That the remaining findings requiring contractor action be addressed through technical direction to the contractor.
4. That the RFFO Manager require that K-H provide an annual update to the ISMS Manual.
5. That the following actions be taken to address the Phase II verifications of the Site's remaining facilities and activities.
   - Develop specific core requirements or criteria similar to that which were used in the Phase II portion of this verification to be incorporated into the RFFO and K-H Readiness determination procedures for use in all readiness determinations.
   - Incorporate this set of core requirements or criteria into routine programmatic assessments for performing assessments of ongoing site operations.
   - Review and modify, as necessary, the RFFO Integrated Assessment Schedule to include performing routine programmatic assessments for performing assessments of ongoing site operations.
   - Review and modify, as necessary, the RFFO Integrated Assessment to include performing routine programmatic assessments of ISMSS implementation for ongoing site operations.

PURPOSE

The purpose for the Site ISMS Verification was to provide a recommendation to the Manager, RFFO, whether or not to approve the ISMS description (Phase I) which was submitted by K-H or delineate the areas in which the ISMS description does not conform to the previous guidance. The Phase II verification was conducted to determine how ISMS is being implemented in Buildings 371 and 664. These facilities were chosen for their diversity of activity, the fact that they are managed by two different subcontractors, and in the case of Building 371, the inherent risk. Both Phase I and II also focused on the RFFO's role in the ISMS at the Site.

SCOPE

The scope of the Site ISMS Verification Phase I covered the ISMS for the entire Site. The ISMS Verification Phase I evaluated the adequacy of the K-H ISMS when compared to the expectations of the RFFO Manager, the requirements of the DEAR clause and the DOE Policy for Safety Management Systems. The scope of the review at the Site included the core functions and guiding principles for ISMS as defined in the DOE P 450.4, “Safety Management System Policy”.

The verification assessed each level within the RFFO and K-H management. Within K-H, the verification included the sitewide corporate ISMS. Beyond K-H management, the review assessed ISMS within each primary subcontractor and how it is integrated “upward” to the sitewide corporate system and how it is coordinated “downward” to the individual facility and process. The verification assessed the adequacy of the programmatic documentation of the K-H ISMS Manual at the individual facility level. The verification also assessed the integration between K-H and RFFO, between K-H and its primary subcontractors (including Wackenhut Services, LLC), among primary subcontractors, as well as the integration across and within RFFO.

A Phase II verification was conducted in Buildings 371 and 664. This Phase II review included five lines of inquiry:

Identification and control of work, including feedback and continuous improvement.
Control of operations including the identification and mitigation of hazards.
Planning for safety in specific subject areas (including maintenance).
The role of RFFO in assuring that the mission is safely accomplished.
Prioritization and allocation of resources.

OVERALL APPROACH

In Phase I, the ISMSV team reviewed the ISMS Manual and supporting procedures and processes which were submitted to the RFFO Manager for approval. The review evaluated the description against the guiding principles and core functions defined in DOE P 450.4 and whether the ISMS achieved the overall objective of Integrated Safety Management defined as follows:

"The Department and contractors must systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of safety management into all facets of work planning and execution. In other words, the overall management of safety functions and activities becomes an integral part of mission accomplishment."

The ISMSV was conducted using the following five ISMSV subteams as defined in section 7.1 of the ISMSV Review Plan.

Business, Budget and Contracts (BBC)
Hazards Identification and Standards Selection (HAZ)
Management (MG)
Operations and Implementation (OP) including Subject Matter Experts (SMEs)
DOE RFFO (DOE)

Each of the team members received the ISMS Executive Course as well as direction from the Team Leader and Mentors on strategy and methodology for the review. Each sub-team developed their respective portions of the Criteria Review and Approach Document (CRAD). The CRAD integrated the five core functions and seven guiding principles for each team (see the Review Plan in Appendix 4). This breakdown is shown in Figure 1 of the Review Plan and identifies how the core functions and guiding principles were combined and addressed by the individual sub-team's criteria.

During December 8-12, 1997, the ISMSV team attended three and one half days of presentations from RFFO, K-H and its primary subcontractors describing the Site's ISMS (see the presentation schedule in Appendix 5). Following the presentations, the CRAD was finalized and the Final Review Plan was issued. The teams completed a list of requested interviews and documents for the actual verification.

During Jan. 12-22, 1998, the team members conducted their evaluation of the ISMS description against the criteria in the CRAD. This evaluation was used to support conclusions as to whether the individual objectives were met. The record of these evaluations are provided in Appendix 2. A Form 1 was prepared for each Objective in the CRAD and documented the conclusions reached concerning the objective and criteria. Each Form 1 also includes findings for criteria that were not met. Only items requiring K-H team or RFFO action were identified as Findings. These findings were summarized in "Opportunities for Improvement" in the Executive Summary of the final report. In addition, practices that were considered to be exceptional were identified as "Noteworthy Practices."

Separate Form 1s were prepared for the Phase II review. The team members kept separate their issues regarding documentation versus implementation for easy identification. Phase II results are reported separately in this report.

VERIFICATION OF THE SITE S ISMS

The ISMSV results are reported by sub-team.

PHASE I RESULTS AND FINDINGS

Business, Budget and Contracts

The Site's process for developing the closure strategy and prioritization is well established. The strategy is based on risk reduction and is sensitive to and incorporates regulatory requirements as well as input from stakeholders. As a result of this strategy and the corresponding detailed Life Cycle Baseline, RFFO provides timely and detailed mission definition, work expectations, and priorities to K-H.

The K-H process for translating mission expectations into work, setting priorities, and allocating resources is a mature and effective process. The process is well documented and practiced as the documentation prescribes. Line management clearly controls and implements this planning and budgeting process. The teams involved in the process are seamless, led by management, and include required mission and safety experts.

The planning and budgeting process considers hazards up front and allocates resources that balance mission and safety requirements. These requirements are imbedded in the Work Proposal Documents that clearly define the scope of work involved. The resources allocated to satisfy safety are fully integrated in these documents and are not otherwise separated or identified as different than work requirements.

Line organizations in both RFFO and K-H provide independent review and approval of the planning and budgeting documents. The RFFO process for this review and approval is not formal and, as a result, consistency and quality in the performance of these functions vary.

Change control of funded projects is also a formal and effective process that is controlled and implemented by line management. Changes are formally reviewed and approved by both K-H and RFFO. The process for work resource allocation and definition ensure that changes reduce or add scope and do not unbalance safety and mission resource allocation. The K-H procedure for formal distribution of change control documents does not ensure that changes flow to appropriate project managers and therefore requires change.

At the time of the verification, the required DEAR clause implementing ISMS had not been formally incorporated into the subcontractors' contracts as required. Also, changes exist in the clause that have not been submitted to DOE Headquarters for approval as required.

Personnel involved in the planning and budgeting process are competent to perform their assigned responsibilities. Those interviewed demonstrated significant knowledge and many have advanced degrees and licensed registrations in their disciplines. The focus in planning and budgeting on engineering disciplines and the extensive experience are an excellent practice.

The objectives of the Business, Budget, and Contracts functional area were met. The findings indicate deficiencies that should be corrected. Protecting the public, workers, and environment is a priority whenever activities are planned. The priorities of completion of Site closure are effectively balanced against the requirements of safety by a competent, committed, and involved line management. The risk at the site is being reduced.

FINDINGS

BBC1-1 The K-H contract Performance Measures for FY98 are not yet finalized, even though the fiscal year is over one quarter complete.

BBC1-2 RFFO review and validation of contractor submitted Work Planning Documents lack formality. There is no current governing directive or order that reflects the current functions, responsibilities and review process. This lack of formality results in inconsistent quality and depth of review of the work being developed for incorporation into the K-H contract.

BBC1-3 The contractor's procedure for change control of funded tasks does not ensure that the changes flow from K-H to the subcontractor's project manager.

BBC1-4 Incorporation of 48 CFR (DEAR) 970.2303-2(a) clause into the K-H contract was not completed by December 31, 1997 as required by the Department of Energy's Office of Procurement and Assistant Policy. [Department of Energy, Acquisition Regulation, Acquisition Letter, No. 97-07, September 26, 1997]

BBC1-5 As of January 15, 1998, the 48 CFR (DEAR) 970.2303-2(a) clause has not been incorporated into RMRS, SSOC, DCI, WSLCC and any of their subcontractors contracts. [Department of Energy, Acquisition Regulation, Acquisition Letter, No. 97-07, September 26, 1997]

BBC1-6 The language in modification 063 to the K-H Contract Number DE-AC34-95RF00825 for incorporation of the 48 CFR (DEAR) 970.2303-2(a) has been changed from the original DEAR clause. The reasons for the deviations were documented but approval by the Procurement Executive at headquarters has not been initiated as required by the Office of Procurement and Assistance Policy. [Department of Energy, Acquisition Regulation, Acquisition Letter, No. 97-07, September 26, 1997]

Management

Kaiser-Hill and the first-tier subcontractors have established processes to define clear roles and responsibilities to ensure the safety, accountability, and authority of line managers. These processes address the manager's role in the definition of the scope of work and in determining hazard controls and prescribe levels of competency.

Documentation describing roles and responsibilities for K-H is not fully complete. The ISMS Manual does not clearly define the chain of command. Competency requirements for managers are not specified for key management and technical positions. A comprehensive functions and responsibilities document is in preparation; however, it is not yet promulgated and will require updating of Site procedures to reflect new roles and responsibilities. A formal process does not exist to evaluate Pilot Programs prior to implementing them.

Subcontractor processes to describe roles and responsibilities are generally established across the Site. Some subcontractors do not have documents describing roles and responsibilities, and one lacks a procedure delineating that line management is responsible for safety. There have been a number of recent organizational changes which have not been fully documented. This has caused some confusion among some building managers. Site documents describing hazards analyses techniques are not fully understood by managers. This prevents them from fully carrying out their responsibilities for analyzing hazards and selecting appropriate controls.

K-H and the first-tier subcontractors have established processes to ensure programs for continuous improvements are established and functioning. Line and independent oversight roles are well defined.

K-H has not established a process for administering Authorization Agreements (AAs). Formal mechanisms defining change control for AAs and processes to ensure that requirements listed in the AA are binding on appropriate first tier subcontractors are lacking.

FINDINGS

MG1-1 The ISMS Manual and the *Draft* K-H Rocky Flats Closure Project, Functions & Responsibilities Document do not include a clear definition of line management, and do not clearly delineate the line management chain of command encompassing K-H and first tier subcontractors. K-H and the first tier subcontractors do not have a comprehensive strategy to update Site documentation to reflect the revised roles & responsibilities shown in these documents.

MG1-2 K-H has not formally documented and communicated to the first tier subcontractors expected competency requirements for key management/technical positions delineated in the contract and for which K-H has personnel selection approval.

MG1-3 The K-H AA process lacks change control thresholds for the revision or updating of AAs. The AA does not clarify which specific tasks or activities are authorized within the scope of the specific AA. K-H has not developed and institutionalized a mechanism to ensure that the requirements contained in an AA are made binding on the appropriate first tier subcontractor.

MG1-4 No formal documented requirements for the chartering of, determination of the duration of, evaluation of the success of or determination of the safety equivalency, or the path forward for Pilot Programs exist.

MG1.1-1 Clear roles and responsibilities have not been established for managers in Building 707.

MG1.1-2 Documents describing hazards analysis techniques are not adequately descriptive to permit the correct selection of these techniques. Managers do not fully understand these processes and are not routinely involved in making selection decisions.

MG1.2-1 Documentation describing clear roles and responsibilities are not current for the RMRS organization.

MG1.4-1 WSLLC does not have an internal roles and responsibilities document.

MG2-1 The K-H, Rocky Flats Closure Project, Functions & Responsibilities Document is not yet approved and published. No implementation strategy has been developed to disseminate the revised roles and responsibilities throughout the K-H and subcontractor organizations.

MG2-2 A formalized, documented methodology to roll up assessment results and perform analyses for sitewide trends is lacking.

MG2.4-1 WSLLC's process for ensuring that changes are incorporated into procedures is weak. There have been instances in which shift orders designated to become permanent changes have not been implemented into procedures.

MG3-1 The ISMS Manual does not describe processes for hazards analysis and identification of controls in an integrated manner.

DOE/RFFO

This summary is a consolidation of the input from the DOE functional area with comments from the functional area of BBC and HAZ.

The RFFO Manager is committed to the full implementation of ISMS by K-H and its subcontractors. Simply stated, it is her goal that the mission to close the Site be safely accomplished. She has aligned her staff to meet her commitment, and the result is a team, in its finest sense, that is making significant progress toward successfully achieving that mission.

The function of "Define the Scope" as defined in the Integrated Safety Management Guide, is being performed superbly. The function of "Balanced Priorities" is being accomplished by the Deputy Manager for Technical Programs supported by the Assistant Manager for Program and Planning Integration coordinating with the RFFO staff in this regard.

The functions of "Analyze Hazards" and "Develop and Implement Controls" are maturing toward effectively managing the efforts at work authorization, and hazard identification and control. Due to the loss of a subject matter expert in fire protection, DOE staff came up with an innovative solution -- offset the loss by obtaining support from the Core Technical Group. As the end of the mission approaches, this example of finding innovative solutions should become routine.

A shortcoming in these two functions is the failure to keep contractually specified DOE standards current. Kaiser-Hill recently committed to an Order compliance approach to standards. Some of the RFFO staff do not have a sense of urgency with regard to making sure the correct standards are in place. Many areas, including security, training, budget execution, and management of real property require updating the standards included in the K-H contract.

The RFFO staff is capably and creatively addressing the "Perform Work" function. An example and noteworthy practice is the expanded scope of the readiness determination process.

The function of "Continuous Feedback and Improvement" is being effectively integrated across the RFFO staff. The RFFO O 220.1, RFFO Assessment Program, is in place and being implemented. An extensive evaluation effort is underway with all assistant managers participating. Part of the vision for this effort is the analysis of the resulting data. The leadership for this assessment effort is both knowledgeable and dedicated.

The Facility Representative program is performing successfully. The program is well defined and executed. The RFFO technical qualification training program is under revision. All Technical Program Assistant Managers are committed to ensuring that the revised program is a success. The technical qualification program does not ensure that project management skills are developed or improved. Not paying attention to this area of training has the potential to significantly adversely impact the completion of the mission.

In many cases, the RFFO staff is performing their ISMS functions without formal procedures. The competence and capability of the current staff has been sufficient to ensure ISMS functions have been successfully implemented to date. Desk top procedures and processes are being developed to address how business will be conducted pursuant to the management alignment process.

The Manager has been well served by the Program and Planning Integration effort under the Deputy Manager for Technical Programs which has been very effective in developing an integrated path to achieving the mission—closing the Site.

The process for confirming readiness has been expanded beyond the DOE proscribed nuclear scope. This will enhance the safe accomplishment of the mission.

In conclusion, the RFFO Manager was found to have nearly implemented and is in the process of fully implementing an ISMS.

FINDINGS

DOE1-1 The Functions and Responsibilities Manual (FRAM), Appendix B does not accurately assign or define roles and responsibilities for conducting business under the recently realigned RFFO organization.

DOE1-2 RFFO has not provided the contractor a current list of standards in the contract.

DOE2-1 There is general lack of documented processes or procedures for conducting business.

DOE3-1 The Technical Qualification process is under revision. The goals are to reduce the administrative burden and to increase management involvement.

DOE3-2 The Training Program does not encourage development of project management skills.

Hazards Identification and Standards Selection

This assessment addresses whether hazards associated with the work are identified, analyzed, and categorized; applicable ES&H standards and requirements are identified and agreed upon; and line management is responsible for hazards identification, analysis and controls. The objectives for hazards analysis, control identification and selection of standards have not been fully met. This is due primarily to inadequate integration of the ISMS Manual and implementing procedures for various hazards analysis methodologies and control identification processes, as well as significant weaknesses in the Activity Definition Process (ADP). Specifically, the ISMS Manual and ADPs (for other than ABs) do not ensure that: 1) hazards are analyzed and controls identified commensurate with the risk for a proposed activity, 2) all Site activities outside a nuclear facility are evaluated for impacts on a given authorization basis, 3) the hazards analysis provides insights on the severity of the consequences, an understanding of how the controls mitigate the consequences, and how controls are promulgated into work control documents, and 4) controls identified in the hazards analysis are implemented or changes to the controls are reevaluated for impact against the original analysis. In addition, the "Team Based Approach" identified in the ADP lacks clear definition on when to use a specific approach, the methodology of the approach, and the criteria for selection of personnel designated to perform the hazards analysis and controls identification.

Several processes exist as described in the ISMS Manual and procedures for hazards analysis and identification of controls for the full range of nuclear, chemical, and industrial hazards. This body of procedures provide many of the tools necessary for applying a graded approach to the hazards analysis, and these procedures are consistent with applicable ES&H Orders and Standards identified in the K-H contract. However, the ISMS Manual and implementing procedures are not adequately integrated to ensure the appropriate processes are consistently employed by all subcontractors. In addition, it is not clear how the various processes are related to one another. The ISMS Manual and procedures do not ensure that proposed activities or changes to proposed activities outside but in the vicinity of hazard category 2 and 3 facilities are reviewed for potential impacts to the authorization basis for these facilities. It also does not define the process to ensure changes to controls identified by many of the hazards analysis tools are not invalidated or defeated. It is also concluded that not all subcontractors are using the processes as described in the ISMS Manual and implementing procedures.

The ADP provides a top level screening process in which managers may determine the type of analysis to perform commensurate with the risk. The degree of subjectivity in the ADP screen is such that the process selected for hazards analysis may be less rigorous than appropriate for the activity resulting in an inadequate selection of controls. Furthermore, the Activity Control Envelope (ACE) definition process, which provides guidance for determining the type of analysis to be performed and is the highest level process invoked from the ADP, leaves the degree of rigor in the hazards analysis to the discretion of the ACE Team.

The Site is in the process of developing AAs for all hazard category 2 and 3 facilities and is transitioning from the Master Activity List (MAL). When this transition is complete and the AAs are approved by RFFO, a defined and approved authorization basis will exist sitewide. All activities and facilities not covered by a hazard category 2 or 3 facility AA will be covered by the Site SAR AA. However, for the purpose of performing a Safety Evaluation Screen (SES) and/or Unreviewed Safety Question Determination (USQD) on proposed activities (other than those currently reflected on the MAL), an approved Authorization Basis list does not currently exist.

The structured methods to identify, select and gain approval for new sitewide standards and requirements are not in place. Likewise, the ISMS Manual does not adequately describe the procedures that implement the safety standards and requirements. The documentation identifies no formal mechanism to flow down revised environment, safety and health (ES&H) standards and requirements to the subcontractors. ISMS procedures, as noted above, utilize acceptable standards and methodologies related to hazards analysis and identification of controls for nuclear facilities. A similar conclusion has been reached with respect to environmental compliance and the Rocky Flats Cleanup Agreement. Even though there are limited mechanisms for flow down of ES&H requirements (e.g., contractor procedures or manuals of practice), the Environmental Management System (EMS) adequately describes the over-arching approach to implementing environmental protection requirements for the Site.

The Nuclear Safety Manual (NSM) provides clear roles and responsibilities for personnel involved in the analysis of hazards and the identification of adequate controls for work to be performed in the hazard category 2 and 3 nuclear facilities. Personnel training and qualification requirements are described, and the requirements are set forth for the subcontractor personnel involved in these activities. The ISMS should clearly establish the link between nuclear safety and the NSM. With the exception of the "Team Based Approach" processes referenced in the ADP, competence commensurate with responsibility is ensured through compliance with applicable ISMS procedures and through the selection of subject matter experts for hazards analysis and identification of controls. The pilot JHA process which is a team based approach has yet to be formalized. Accordingly, team member selection and competency is informally determined through management judgment since no selection criteria is provided.

The RFFO functions, responsibilities and authorities for oversight, review and approval of authorization basis flow down from the Level 1 FRAM and are generally consistent with the requirements of the DOE nuclear safety Orders. Primary responsibility for review and approval of authorization basis analyses and controls is assigned to the RFFO, Assistant Manager for Engineering. However, several key roles and responsibilities from the Level 1 FRAM related to DOE P 450.2A, Identification, Implementation and Compliance with ES&H Requirements, have not been incorporated into the RFFO FRAM.

The RFFO does not currently have procedures for the review and approval of hazards analysis, identification of controls, or safety standards and requirements. In addition, the Technical Qualification Program is under revision and full implementation of the previous program was not achieved. However, through assignment of subject matter experts and appropriate management oversight, competence commensurate with responsibilities is ensured with regard to the review and oversight of hazards identification, analysis, categorization and identification of controls.

FINDINGS

HAZ1-1 The ISMS Manual and Level I procedures do not adequately describe the integration of the many hazards analysis and controls identification processes.

HAZ1-2 The ADP screening method is overly subjective and has led to using less rigorous tools to analyze hazards and identify controls.

HAZ1-3 ISMS Manual and implementing procedures do not ensure all Site activities are evaluated for impact on a given Authorization Basis.

HAZ1-4 Hazards analysis using the "Team Based Approach," as defined in ADP, do not result in an understanding of severity of consequence, how controls mitigate hazards, and how controls are promulgated into work control documents.

HAZ1-5 The "Team Based Approach," as defined in ADP, is not well defined on when to use the various approaches, methodologies, or the criteria for selecting personnel designated to analyze hazards and identify controls. (See Finding HAZ3.1) Also, various "Team Based Approaches" do not consider:

1. Impacts from adjacent or concurrent activities (cumulative impacts).
2. Dissenting opinions.
3. Whether periodic reviews or a change control process exist ensuring identified controls are not invalidated or defeated.

HAZ1-6 WSLLC and DCI management are not familiar with the ADP and have not used it for their activities. It is not evident in the ISMS manual for these two companies what process they use to determine the method of hazards analysis commensurate with the risk.

HAZ1-7 The SSOC independent safety review process does not adequately define how independent safety reviews will be completed for all items as required by K-H.

HAZ2-1 The ISMS Manual and procedures do not ensure existing hazards analyses and associated controls (other than those related to AB documents) are reviewed for impact by proposed activities.

HAZ2-2 For the purposes of performing a SES/USQD on proposed activities (not currently reflected on the MAL), an approved and controlled AB list has not been established.

HAZ3-1 For anything less than an expert based process, there are no criteria to select personnel that are qualified to perform hazards analyses or to establish the necessary controls.

Operations and Implementation

The OP functional area evaluated the adequacy of the ISMS Manual for work authorization, development and implementation of controls, and support program integration with the line. In some cases, criteria were evaluated in conjunction with other functional areas of the ISMSV. The assigned functions and principles of ISMS were evaluated both from a line management perspective in CRAD OP.1 and OP.2 as well as from a support program perspective in OP.4. The support organizations which were reviewed within OP.4 included Safeguards and Security, Radiological Control, Maintenance, Fire Protection, Criticality Safety, Industrial Hygiene and Safety, and Training.

The Verification Team determined that the ISMS Manual and implementing and integrating mechanisms were generally satisfactory. Work is required to be conducted through approved procedures and work packages. Individuals who may authorize work are clearly identified and qualified. Authorized work is communicated through mechanisms such as the Plan of the Day (POD) and the Plan of the Week (POW) described in the Site ISMS Manual and Conduct of Operations Manual. These mechanisms were considered to be adequate. The review also determined that the ISMS description and mechanisms for operations authorization were adequate both at the shift manager's level of authority to approve start of work as specified in Conduct of Operations Procedures and for verifying readiness to start facility operations through the processes of Operational Readiness Reviews, Readiness Assessments, or Management Reviews.

The Verification Team noted some deficiencies with the description of the roles and responsibilities. In one case, the roles and responsibilities for a subcontractor were not formally specified, and within some buildings, they were out of date.

The ISMS Manual was determined to be weak in the area of control development and identification for certain processes and jobs. Some of this weakness is the result of deficiencies with the ADP procedure which did not always provide for a consistent and clearly specified process for analyzing hazards and developing controls. In addition, it was noted that the IWCP-3 did not provide an adequate description of some processes such as JHAs and control development. Although revision 3 to the IWCP-3 will be an improvement from the current version, when implemented it still will not resolve all of these issues. It was also noted that one subcontractor had not incorporated the ADP and JHA process which are specified in the ISMS Manual as sitewide requirements.

Finally, the Verification Team noted that the Site has made significant progress towards resolution of issues raised as a result of safety assessments and other less formal means of management feedback. Progress was particularly evident in the areas of fire protection and criticality safety. However, some remaining deficiencies were noted. Findings in the area of Shift Manager and Criticality Safety Engineer training and qualification were identified.

FINDINGS

OP1-1 The lack of clear consistency in defining the activities governed by the ISMS process as developed through the ADP procedure and then to the ACE procedure will lead to an inadequate process for applying the appropriate standards for hazard assessment to the activity and the subsequent controls for that activity.

OP4-1 (CS) The Qualification Program for Criticality Safety Engineers is out of date and does not support continuous improvement.

OP4-2 (CS) RMRS line management has failed to correct deficiencies regarding Criticality Safety Officer support identified in assessments of the criticality safety program.

OP4-1 (FP) The roles and responsibilities were outdated in almost every document which was reviewed. They have not been kept up with the frequent reorganizations at the Site.

OP4-1 (MT) The IWCP work package planning process (IWCP-3, revision 2 and 3) is less than adequate in the description of how to properly perform and document a JHA.

OP4-2 (MT) There is no formal process to ensure that planners have competence commensurate with their IWCP responsibilities.

OP4-3 (MT) There are no mechanisms between K-H and the various subcontractors on how to accomplish integration ensuring satisfactory support in completing JHAs as required.

OP-4-1 (SC) WSLLC does not use the K-H ADP to determine the appropriate planning process that defines the controls necessary to perform the activity safely.

OP-4-2 (SC) WSLLC does not have written procedures that include line management responsibilities as required in the ISMS Manual.

OP4-1 (TR) SSOC management has not developed a comprehensive plan for implementing the Configuration Control Authority (CCA) program. Implementation of the CCA program is needed to resolve continuing deficiencies in shift manager training and qualification.

PHASE II ISMS IMPLEMENTATION VERIFICATION RESULTS

Business and Management

The Phase I verification gave the BBC sub-team the opportunity to also examine the output and implementation of the planning and budgeting process. The Phase I Forms 1 for the BBC functional area support these conclusions.

The processes for defining work, setting work expectations, translating mission expectations into work, setting priorities, balancing mission and safety requirements, and allocating resources are mature, well documented, and implemented as the documentation prescribes. The formal change control process for funded projects is implemented in accordance with the procedures.

The priorities of completion of Site closure are effectively balanced against the requirements of safety by a competent, committed, and involved line management.

Phase II for the BBC functional area is complete.

Management

Requirements that specify the establishment of clear roles and responsibility with line managers responsible for safety were verified to be in place for Buildings 371/374 and 664. As noted in the Phase I verification, Site documents describing hazard analyses techniques are not fully understood by managers. This inadequacy was verified to exist as these processes are implemented in Building 371.

MG1.1A-1 Building 371 managers are not fully conversant with the selection of hazards analysis techniques used to perform work. Use of EWP, JHA, or the provisions of the IWCP were not fully understood.

Hazards Identification and Standards Selection

The implementation in the area of hazards analysis and control identification is in progress in Building 371 but is not complete. Facility management is cognizant of ISMS and its place in Building 371 operations. Upgrades to Site Level 1 procedures and to the ISMS Manual as discussed in the Phase I verification will facilitate implementation of ISMS in Building 371. In Building 664, the ISMSV objectives for hazards identification and standards selection have been met. Although recent technical safety requirement changes have not been implemented, the process of identification, analyzing the hazards, and identifying controls in the Final Safety Analysis Report (FSAR) revision fully satisfies the objectives of the CRAD.

Building 371 has an RFFO approved AA and Basis for Interim Operation (BIO) document providing a facility level hazards analysis and set of controls. The AA identifies the BIO implementation plan that lays out a schedule for implementation. The BIO represents the new AB and provides for continuation of baseline and mission program activities, as well as future activities using the SES/USQD process. Until implementation of the BIO and safety management programs described therein is completed, the ISMS is not considered to be fully implemented.

Building 371 has established an AB List which includes the Safety Analysis Report (SAR), Safety Assessments, supporting calculations, USQDs , Justifications for Continued Operations, etc. The controlled copies are maintained in a library under the custody of the nuclear safety lead. Agreement between K-H and SSOC on the contents of this list and library is yet to be reached. The documents in the AB List are commonly referenced by the Shift Managers, the Shift Technical Advisors, and the Nuclear Safety Advisors in the conduct of their work.

The qualifications of the Building 371 facility technical staff and members of the Engineering organization, who would be called upon to analyze hazards and to establish appropriate controls, are established by the requirements set forth in the SSOC Training Implementation Matrix. However, since the team based processes for identifying hazards and controls do not provide guidance on personnel selection, there is no assurance that personnel with adequate credentials and experience are always selected to participate in these processes.

The Building 371 organization has been restructured along project lines and the majority of those interviewed are relatively new to their positions although not new to Building 371 nor to nuclear operations at the Site. In general, those interviewed appeared to be highly competent and knowledgeable of the facility and the facility's authorization basis. They have all been trained on ISMS, and each exhibit a thorough understanding of the concept and its application to Building 371.

Building 664 has an RFFO-approved FSAR/TSR providing a facility level hazards analysis and set of controls. A recent update was approved by RFFO, but is not completely implemented in Building 664. The FSAR has identified, analyzed, and categorized the hazards for activities currently conducted or planned in the facility. The FSAR analysis is appropriately graded for the hazards and risks associated with Building 664. As procedures are being developed for new activities, appropriate SESs are being performed to evaluate impact to the RFFO-approved AB. Evidence exists that proposed modifications to the facility are receiving SESs to determine their impact on the AB as well.

The Building 664 hazard controls being identified via the hazards analyses are receiving appropriate reviews and approvals and are being implemented in the facility. However, a defined process does not exist on how controls defined from JHAs should be incorporated into work instructions.

Building 664 line management ownership for hazard identification and analysis as well as hazard control identification and implementation is evident. In addition, the competency of the personnel involved in hazards analysis and control identification is considered adequate.

The results of this verification for these two facilities should not be compared due to differences in the complexity, diversity, and risk of activities carried out in each facility.

Operations and Implementation

The OP functional area evaluated the work authorization and control implementation processes in Buildings 371 and 664 as described in the K-H ISMS Manual and lower-tiered implementing procedures. This included review of work control and authorization documents, interviews with building management and operators, and observation of work planning meetings. Some criteria were reviewed in conjunction with reviews of specific site support organizations (OP.4) and Management (MG.2). The assigned functions and principles of ISMS were evaluated both from a line management perspective and from a support organization perspective. Support organizations included Safeguards and Security, Radiological Control, Maintenance, Fire Protection, Criticality Safety, Industrial Hygiene and Safety, and Training. The results of the OP Phase II Review including relevant information from the Subject Matter assessments are recorded on Assessment Form OP.3.

The Verification Team noted that processes for obtaining work authorizations were in place and utilized in Buildings 371 and 664. In general, facility personnel were familiar with their roles with respect to the work authorization process. However, it was noted that senior line management in Building 664 did not have an adequate understanding of the building fire protection safety systems.

Both Buildings 371 and 664 conduct work planning for the purpose of hazard identification and control development. However, some weaknesses were noted in the implementation of the Job Hazard Analysis (JHA) process in Building 371. Reviews of Building 371 JHAs did not demonstrate an integrated approach to hazards analysis. In many cases, relevant hazards were not considered and safety controls were not adequately identified. During the verification, the Team attended a fact finding meeting that was held in response to an occurrence in Building 371. This occurrence involved a routine inventory and leak check of radioactive sources without adequate analysis of the hazards involved and implementation of safety controls.

An effort to complete JHAs for the various activities conducted by the waste technicians in Building 664 has begun. Three JHAs have been completed. Each of the JHAs are judged to be adequate based on the risk of the activities, and the JHAs identify effective controls to address the hazards of the activities. The JHAs received appropriate review and approval and are being used as stand alone documents to support pre-evolution briefings.

Pre-evolution briefings are held in Building 371 and 664 prior to conducting work so that personnel can review the hazards and safety controls for the job. Based on observing several pre-evolution briefings in Building 371, deficiencies were noted in the implementation of pre-evolution briefings that could result in workers not being aware of hazards or key safety controls.

With the exception of the findings on the JHA and pre-evolution briefing processes in Building 371, implementation of work authorization and safety controls as described in the K-H ISMS Manual was determined to be adequate.

Findings

OP3-1 A hazard review process has not been implemented in Building 371 in a manner that ensures hazard controls are incorporated into the work documents. In addition, adequate compensatory measures are not in place to compensate for this immature implementation of the commitments of the ISMS Manual. Specifically, the procedures for verifying adequate identification of hazards and implementation of appropriate controls before activities are placed on the POD when the activities involve HSPs or other procedures which have not been developed within Building 371 operations organization is apparently not adequately robust.

OP3-2 The Building 371 pre-evolution briefs were often deficient and therefore do not ensure that the workers are aware of hazards and will properly implement controls prior to commencement of work.

OP3-3 Building 664 line management does not have an adequate understanding of building fire protection safety systems.

CONCLUSIONS

Phase I - ISMS Description

The current activities and facilities at the Site are safely operating under various authorization bases. Start up of new activities occurs only after completing the appropriate readiness determination process based on the activities' hazards. The purpose of this verification was to ascertain the presence of the described ISMS processes of integrated management of safety. The deficiencies noted relate to those integration processes and not to Site operations currently ongoing.

The integration of the Activity Definition Process (ADP), the Activity Control Envelope (ACE) and various hazard analysis tools is unclear.

K-H, its subcontractors, and the RFFO management demonstrated a practical understanding of ISMS core functions and guiding principles. Each organization is diligently working toward institutionalization and full implementation of ISMS. Many of the required manuals of practice and implementing procedures are in place. A number of documents have recently been revised or developed to support implementation of ISMS at the Site.

RFFO has undergone a re-alignment of responsibilities that enhances the Manager's ability to work effectively with the K-H team, Headquarters, and other stakeholders in closing the Site safely. A concern is the failure to negotiate an appropriate set of ES&H standards and requirements into the contract.

Many of the mechanisms required to safely perform the mission of Site closure are in the process of being formalized; these include Integrated Work Control Process (IWCP), Enhanced Work Planning (EWP), and Job Hazard Analysis (JHA). In many cases, the mechanisms or practices have evolved informally to provide the needed integration. The documentation of these practices requires management emphasis.

Many documents which identify the roles and responsibilities for personnel with K-H as well as the sub-contractors are not current or do not reflect current organizations. In addition, many positions which are important to safe operations within the Site do not have current descriptions of required competencies.

The following are the Noteworthy Practices and Opportunities for Improvement resulting from the ISMS Verification. The Opportunities for Improvement are essentially a consolidation of the individual findings from the Objectives.

The ISMSV Team concluded that there are a number of deficiencies with the ISMS Manual, only one of which requires correction prior to deeming the ISMS Manual adequate

Phase II - ISMS Implementation

Phase II for the Site is incomplete. Due in part to these ISMS Manual deficiencies, along with deficiencies against the implementing procedures, ISMS is not fully implemented in Buildings 371 and 664. Further, there are specific findings against Building 371 regarding the implementation of the Safety Management Programs identified in the Basis for Interim Operation, adequacy of pre-evolution briefings and hazard identification.

RECOMMENDATIONS

1. That the RFFO Manager approve the ISMS Manual after the following three deficiencies are corrected:
   - The ISMS Manual does not include a clear definition of line management and does not clearly delineate the line management chain of command encompassing K-H and first tier subcontractors.
   - The ISMS Manual does not adequately describe the integration of the many hazards analysis and controls identification processes.
   - It is not evident in the ISMS Manual what process WSLLC and DCI use to determine the method of hazards analysis commensurate with the risk.
2. That the ADP and hazard analysis tool implementing procedures be revised within 60 days to correct the following deficiencies:
   - For other than hazards analysis performed for Authorization Bases (AB) documents in accordance with DOE O 5480.23 and .21:
     ⇒ there is no assurance that hazards are analyzed and controls identified commensurate with the risk for a proposed activity
     ⇒ that activities outside but in the vicinity of hazard category 2 and 3 facilities are reviewed for impact to the facility or Site AB
     ⇒ that an appropriate change control process is required to assess impacts to controls identified in the hazards analysis.
3. That the remaining findings requiring contractor action be addressed through technical direction to the contractor.
4. That the RFFO Manager require that K-H provide an annual update to the ISMS Manual.
5. That the following actions be taken to address the Phase II verifications of the Site's remaining facilities and activities.
   - Develop specific core requirements or criteria similar to that which were used in the Phase II portion of this verification to be incorporated into the RFFO and K-H Readiness determination procedures for use in all readiness determinations.
   - Incorporate this set of core requirements or criteria into routine programmatic assessments for performing assessments of ongoing site operations.
   - Review and modify, as necessary, the RFFO Integrated Assessment Schedule to include performing routine programmatic assessments for performing assessments of ongoing site operations.
   - Review and modify, as necessary, the RFFO Integrated Assessment to include performing routine programmatic assessments of ISMSS implementation for ongoing site operations.

Acronyms

AA	Authorization Agreement
ACE	Activity Control Envelope
ADP	Activity Definition Process
AL	Albuquerque Operations Office
BBC	Business, Budget & Contracts
BIO	Basis for Interim Operations
CCA	Configuration Control Authority
CERCLA	Comprehensive Environmental Response Compensation and Liabilities Act
COE	Center of Expertise
COOP	Conduct of Operations
CRAD	Criteria Review & Approach Document
D&D	Decontamination & Decommissioning
DEAR	DOE Acquisition Regulations
DNFSB	Defense Nuclear Facilities Safety Board
DP	Defense Programs
DWPF	Defense Waste Processing Facility
EM	Environmental Management
EOE	Engineering Operability Evaluation
EPA	Environmental Protection Agency
EPHA	Emergency Preparedness Hazards Analysis
ES&H	Environment, Safety & Health
EWP	Enhanced Work Planning
FHA	Fire Hazards Analysis
FOF	Force-on-Force
FR	Facility Representative
FRAM	Functions, Responsibilities & Authorities Manual
HASP	Hazards Assessment Plan
HAZ	Hazards Identification & Standards Selection
HEU	Highly Enriched Uranium
HLW	High Level Waste
HSP	Health and Safety Practices
IDP	Individual Development Plans
IMC	Integrating Management Contractor
ISMS	Integrated Safety Management System
ISMSV	Integrated Safety Management System Verification
JCO	Justification for Continued Operations
JHA	Job Hazard Analysis
LANL	Los Alamos National Laboratories
LCB	Life-Cycle Baseline
LCO	Limiting Condition for Operation
LMIT Co	Lockheed Martin Idaho Technical Company
LOQI	List of Qualified Individuals
MAA	Material Access Area
MAL	Master Activity List
MAP	Management Alignment Process
MG	Management
MMS	Maintenance Management System

NEPA	National Environmental Policy Act
NRC	Nuclear Regulatory Commission
NSM	Nuclear Safety Manual
NSTR	Nuclear Safety Technical Report
NWCF	New Waste Calcining Facility
OP	Operations & Implementation
ORPS	Occurrence Reporting and Processing System
ORR	Operational Readiness Review
OSRs	Operational Safety Requirements
P&I	Planning & Integration
PAAA	Price Anderson Amendments Act
PD	Position Descriptions
PEB	Pre-Evolution Briefing
PMT	Post Maintenance Test
POD	Plan of the Day
POW	Plan of Work
PPE	Personal Protective Equipment
PPI	Program, Planning & Integration
RA	Readiness Assessment
RCRA	Resource Conservation & Recovery Act
RCT	Radiological Control Technician
RFCA	Rocky Flats Cleanup Agreement
RFFO	Rocky Flats Field Office
RFOP	Rocky Flats Field Office Operating Procedures
RMRS	Rocky Mountain Remediation Services
RP	Review Plan
RWP	Radiation Work Permit
SAR	Safety Analysis Report
SARAH	Safety Analysis & Risk Assessment Handbook
SAT	Systematic Approach to Training
SER	Safety Evaluation Report
SES	Safety Evaluation Screen
Site	Rocky Flats Environmental Technology Site
SME	Subject Matter Experts
SNL	Sandia National Laboratories
SNM	Special Nuclear Material
SPO	Security Police Officer
SSOC	Safe Sites of Colorado
STA	Shift Technical Advisor
TIM	Training Implementation Matrix
TIP	Training Implementation Plan
TLD	Thermoluminescent Dosimeter
TRU	Transuramic
TSA	Technical Safety Appraisal
TSR	Training Scheduling and Records
TSR	Technical Safety Requirements
TUM	Training Users Manual
TYP	Ten Year Plan
UCNI	Unclassified Controlled Nuclear Information
USQD	Unreviewed Safety Question Determinations
WAR	Work Authorization & Control
WERF	Waste Reduction Experimental Facility
WIPP	Waste Isolation Pilot Plant
WSLLC	Wackenhut Services, Inc.

Appendix 1
Phase II Building Profiles

Building 664

Mission and Operations: Building 664's mission consists of interim storage, Real Time Radiography (RTR), shipping and receiving, staging and loading pre-packaged waste containers for off-site shipment. This includes the preparation for shipment of Transuranic (TRU) waste, low-level waste (LLW), TRU mixed (TRU-M) waste, and low-level mixed waste (LLMW), waste inspection and shipment certification.

Hazards: The inventory in Building 664 is principally comprised of waste contained in 55-gallon drums which are limited to a radioactive material inventory of 200 grams of plutonium per drum. Building 664 is a permitted facility under the Resource Conservation and Recovery Act. Operations are governed by 6 CCR 1007-3, Part 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

Waste containers are not opened in Building 664 and there are no chemical processes performed in the Building. Hazards present are, therefore, from radiation exposure from the radioactive materials present in the containers, from operation of the RTR, and from sealed radiological sources used in field radiography. Building 664 can be operated as a Hazard Category 2 facility without any requirements for additional release mitigating systems. This classification is based on unmitigated release of an inventory enveloping all radioactive and non-radioactive hazardous material stored or staged in the facility.

Building 371

Mission: Building 371's mission is residue stabilization, plutonium packaging, and consolidated plutonium waste storage. This includes construction of the wet combustible project and wet combustible processing; residue sampling and processing; shipment of residues off-site; finish sand, slag and crucibles project and processing; treatment of plutonium solutions from Building 371 and other buildings; plutonium consolidation; Special Nuclear Material off-site shipments; decontamination of rooms, conversion of contamination areas to Radioactive Buffer Areas; and room conversion projects.

Hazards:
Building 371, houses the liquids laboratory, standards laboratory, analytical laboratory, and liquid waste sampling laboratories. Both the liquids and analytical laboratories are out-of-service. Caustic waste treatment consists of waste collecting, sampling, precipitating and filtering waste solutions. Processing is performed within gloveboxes. Liquid waste treatment of low-level radioactively contaminated waste consists of acid neutralization, sludge solidification, radioactive decontamination, evaporation and the saltcrete process. Plutonium and highly enriched uranium in metal and oxide forms are stored (in vaults or vault-type rooms), shipped, and received in Building 371. In addition, residues are repackaged and stored in Building 371. Building 371 activities require the use of significant amounts of bulk chemicals (such as potassium hydroxide and nitric acid), liquid nitrogen, bottled, compressed gases and other various chemicals used by facility operations.

Appendix 2

Verification Forms
(Form 1s)

Appendix 3

Lessons Learned

Lessons Learned

These lessons learned were developed during the conduct of the Phase I and II verifications of the contractor's ISMS Description (ISMS Manual) at the Rocky Flats Environmental Technology Site (Site) during the period of December 8-11, 1997, and January 12-23, 1998. This verification covered both Phase I (evaluation of the ISMS description and manuals of practice) and Phase II (assessment of implementation in Buildings 371 and 664). Most of the lessons are of a general nature and are expected to be of benefit across the complex as ISMS verifications are planned and conducted. These lessons learned are presented based on the assumption that ISMSV Team members are experienced in performing assessments or receive the appropriate training prior to participating on the ISMSV Team.

1. Team Size and Composition. The ISMSV Team consisted of 34 members including the approved team leader, a deputy team leader, 6 mentors (who participated in the Savannah River ISMSV), 23 team members, and 3 administrative support personnel. A significant factor in determining the size of the team was the need to create a core group of RFFO staff that understand ISMS and will support its institutionalization. Another factor in having a team of this size was that this was the first case where a site would perform both Phase I and II concurrently.

A significant lessons learned is that Phases I and II should not be performed as separate verifications. Rather, a site should perform a verification of the documentation which comprises the ISMS description and choose two facilities against which to verify implementation of ISMS. The artificial split between the two phases hampered the performance and documentation of the verification.

The following team member experience is considered essential in conducting ISMS verifications:

- Familiarity and understanding of Site programs
- Expertise in a functional area (e.g., BBC, MG, HAZ, OP, DOE)
- Assessment experience (e.g., Audits, and/or Readiness Determinations)
- ISMS training (Knowledge of ISMS Policy, ISMS Guide, and Verification Team Leader's Handbook)
- Familiarity with the DOE Level I FRAM, DOE M411.1

2. Functional Areas Selected for Review. The five functional areas for the Site's ISMSV were chosen based on those which were used for the Savannah River ISMSV. However, the Team would recommend that future ISMSVs combine the BBC and MG functional areas including all objectives and criteria to provide a better integration picture of these areas.

3. Criteria Review and Approach (CRAD) Development. Eliminating the Phase I and Phase II split will greatly facilitate CRAD development. It was very difficult to build completely separate objectives and criteria to address the implementation of specific aspects of the ISMS description.

4. Review Sequence. The review sequence was adequate to support the Team's ability to perform the verification. An optimum review sequence would begin with a one-week training on ISMS, establishment of expectations by the Team Leader, and initial CRAD development. A specific item which should be discussed with the Team during this first week is the difference between the ISMSV and a typical programmatic review.

The next part of the review sequence would include one week of presentations during which the contractor and the site DOE would present its ISMS description in enough detail to

provide the Team with a good background on the various programs and procedures which constitute ISMS, how they are integrated, and the status of implementation. Large displays of information may not be of much benefit to the Team due to the rigorous schedule during the week of presentations. If the information is significant to the Team's understanding of the ISMS description, it should be included in the presentations. In addition, it is helpful to include DOE as part of certain presentations in order to provide a more complete picture of the area being presented (e.g., budget, planning, hazards identification/approval).

- ➢ Recommendations for the presentations include the following:
- ⇒ 1. Demonstration of Line Management involvement.
- ⇒ 2. Areas should be addressed by personnel responsible for execution in order to knowledgeably discuss the details.
- ⇒ 4. The goal is to provide the mechanism processes and controls that management uses to provide ISMS.
- ⇒ 8. Clearly identify the difference between what are the enforced practices versus pilot projects or similar test programs. If the new program will solve a deficiency in the system, demonstrate how, if it works, it will be approved and implemented into an enforceable process.

The actual verification should be scheduled for one week with another 3-4 days for report writing. Establishing a library of borrowed documents is helpful and reduces unnecessary reproduction of voluminous documents. If a library is established, there should be a simple method for determining the document's location, and the documents should be controlled via sign-out sheets. Assignment of POCs to each functional area sub-team is an effective technique to ensure adequate coordination for the Team and to ensure that identified issues were passed to the contractor/DOE in an expeditious manner. There should be a significant effort to combine multiple sub-team interviews with the same individual. However, the Team must establish an approach on splitting the scheduled time.

Team meetings are essential to the success of the verification. A team meeting at the end of the verification week should be held to formulate the findings and to gain an understanding of the key issues to be highlighted in briefings to the contractor and DOE and in the final report.

Clear and consistent expectations for the form and content of the Form 1s must be clearly provided to the team. A scale to grade potential issues should be established prior to the completion of the Form 1s. Categorization of issues as to "Findings," "Issues," "Opportunities for Improvement" or "Deficiencies" should be clearly defined for the Team.

Conclusion:

The best method of determining whether ISMS is in place at a Site is to dispense with the Phase I - Phase II distinction and to perform a complete examination of selected facilities from the floor level through all echelons of supervision and management, through the heads of both the Field Element and the contractor(s). Deficiencies would then point to the need for further examination on the Site or for reexamination of aspects of the initial verification.

Appendix 4

ISMSV Review Plan

Appendix 5

Schedule of Presentations

Appendix 6
Listing of Findings

Phase I Findings

BBC1-1 The K-H contract Performance Measures for FY98 are not yet finalized, even though the fiscal year is over one quarter complete.

BBC1-2 RFFO review and validation of contractor submitted Work Planning Documents lack formality. There is no current governing directive or order that reflects the current functions, responsibilities and review process. This lack of formality results in inconsistent quality and depth of review of the work being developed for incorporation into the K-H contract.

BBC1-3 The contractor's procedure for change control of funded tasks does not ensure that the changes flow from K-H to the subcontractor's project manager.

BBC1-4 Incorporation of 48 CFR (DEAR) 970.2303-2(a) clause into the K-H contract was not completed by December 31, 1997 as required by the Department of Energy's Office of Procurement and Assistant Policy. [Department of Energy, Acquisition Regulation, Acquisition Letter, No. 97-07, September 26, 1997]

BBC1-5 As of January 15, 1998, the 48 CFR (DEAR) 970.2303-2(a) clause has not been incorporated into RMRS, SSOC, DCI, WSLCC and any of their subcontractors contracts. [Department of Energy, Acquisition Regulation, Acquisition Letter, No. 97-07, September 26, 1997]

BBC1-6 The language in pending modification 063 to the K-H Contract Number DE-AC34-95RF00825 for incorporation of the 48 CFR (DEAR) 970.2303-2(a) has been changed from the original DEAR clause. The reasons for the deviations were documented but approval by the Procurement Executive at headquarters has not been initiated as required by the Office of Procurement and Assistance Policy. [Department of Energy, Acquisition Regulation, Acquisition Letter, No. 97-07, September 26, 1997]

MG1-1 The ISMS Manual and the *Draft* K-H Rocky Flats Closure Project, Functions & Responsibilities Document do not include a clear definition of line management, and do not clearly delineate the line management chain of command encompassing K-H and first tier subcontractors. K-H and the first tier subcontractors do not have a comprehensive strategy to update Site documentation to reflect the revised roles & responsibilities shown in these documents.

MG1-2 K-H has not formally documented and communicated to the first tier subcontractors expected competency requirements for key management/technical positions delineated in the contract and for which K-H has personnel selection approval.

MG1-3 The K-H AA process lacks change control thresholds for the revision or updating of AAs. The AA does not clarify which specific tasks or activities are authorized within the scope of the specific AA. K-H has not developed and institutionalized a mechanism to ensure that the requirements contained in an AA are made binding on the appropriate first tier subcontractor.

MG1-4 No formal documented requirements for the chartering of, determination of the duration of, evaluation of the success of or determination of the safety equivalency, or the path forward for Pilot Programs exist.

MG1.1-1 Clear roles and responsibilities have not been established for managers in Building 707.

MG1.1-2 Documents describing hazards analysis techniques are not adequately descriptive to permit the correct selection of these techniques Managers do not fully understand these processes and are not routinely involved in making selection decisions.

MG1.2-1 Documentation describing clear roles and responsibilities are not current for the RMRS organization.

MG1.4-1 WSLLC does not have an internal roles and responsibilities document.

MG2-1 The K-H, Rocky Flats Closure Project, Functions & Responsibilities Document is not yet approved and published. No implementation strategy has been developed to disseminate the revised roles and responsibilities throughout the K-H and subcontractor organizations.

MG2-2 A formalized, documented methodology to roll up assessment results and perform analyses for sitewide trends is lacking.

MG2.4-1 WSLLC's process for ensuring that changes are incorporated into procedures is weak. There have been instances in which shift orders designated to become permanent changes have not been implemented into procedures.

MG3-1 The ISMS Manual does not describe processes for hazards analysis and identification of controls in an integrated manner.

DOE1-1 The Functions and Responsibilities Manual (FRAM), Appendix B does not accurately assign or define roles and responsibilities for conducting business under the recently realigned RFFO organization.

DOE1-2 RFFO has not provided the contractor a current list of standards in the contract.

DOE2-1 There is general lack of documented processes or procedures for conducting business.

DOE3-1 The Technical Qualification process is under revision. The goals are to reduce the administrative burden and to increase management involvement.

DOE3-2 The Training Program does not encourage development of project management skills.

HAZ1-1 The ISMS Manual and Level I procedures do not adequately describe the integration of the many hazards analysis and controls identification processes.

HAZ1-2 The ADP screening method is overly subjective and has led to using less rigorous tools to analyze hazards and identify controls.

HAZ1-3 ISMS Manual and implementing procedures do not ensure all Site activities are evaluated for impact on a given Authorization Basis.

HAZ1-4 Hazards analysis using the "Team Based Approach," as defined in ADP, do not result in an understanding of severity of consequence, how controls mitigate hazards, and how controls are promulgated into work control documents.

HAZ1-5 The "Team Based Approach," as defined in ADP, is not well defined on when to use the various approaches, methodologies, or the criteria for selecting personnel designated to analyze hazards and identify controls. (See Finding HAZ3.1) Also, various "Team Based Approaches" do not consider:

1. Impacts from adjacent or concurrent activities (cumulative impacts).
2. Dissenting opinions.
3. Whether periodic reviews or a change control process exist ensuring identified controls are not invalidated or defeated.

HAZ1-6 WSLLC and DCI management are not familiar with the ADP and have not used it for their activities. It is not evident in the ISMS manual for these two companies what process they use to determine the level of hazards analysis commensurate with the risk.

HAZ1-7 The SSOC independent safety review process does not adequately define how independent safety reviews will be completed for all items as required by K-H.

HAZ2-1 The ISMS Manual and procedures do not ensure existing hazards analyses and associated controls (other than those related to AB documents) are reviewed for impact by proposed activities.

HAZ2-2 For the purposes of performing a SES/USQD on proposed activities (not currently reflected on the MAL), an approved and controlled AB list has not been established.

HAZ3-1 For anything less than an expert based process, there are no criteria to select personnel that are qualified to perform hazards analyses or to establish the necessary controls.

OP1-1 The lack of clear consistency in defining the activities governed by the ISMS process as developed through the ADP procedure and then to the ACE procedure will lead to an inadequate process for applying the appropriate standards for hazard assessment to the activity and the subsequent controls for that activity.

OP4-1 The Qualification Program for Criticality Safety Engineers is out of date and does not support continuous improvement. (CS)

OP4-2 RMRS line management has failed to correct deficiencies regarding Criticality Safety Officer support identified in assessments of the criticality safety program. (CS)

OP4-1 The roles and responsibilities were outdated in almost every document which was reviewed. They have not been kept up with the frequent reorganizations at the Site. (FP)

OP4-1 The IWCP work package planning process (IWCP-3, revision 2 and 3) is less than adequate in the description of how to properly perform and document a JHA. (MT)

OP4-2 There is no formal process to ensure that planners have competence commensurate with their IWCP responsibilities. (MT)

OP4-3 There are no mechanisms between K-H and the various subcontractors on how to accomplish integration ensuring satisfactory support in completing JHAs as required. (MT)

OP-4-1 WSLLC does not use the K-H ADP to determine the appropriate planning process that defines the controls necessary to perform the activity safely. (Sec)

OP-4-2 WSLLC does not have written procedures that include line management responsibilities as required in the ISMS Manual. (Sec)

OP4-1 SSOC management has not developed a comprehensive plan for implementing the Configuration Control Authority (CCA) program. Implementation of the CCA program is needed to resolve continuing deficiencies in shift manager training and qualification. (TR)

Phase II Findings

OP3-1 A hazard review process has not been implemented in Building 371 in a manner that ensures hazard controls are incorporated into the work documents. In addition, adequate compensatory measures are not in place to compensate for this immature implementation of the commitments of the ISMS Manual. Specifically, the procedures for verifying adequate identification of hazards and implementation of appropriate controls before activities are placed on the POD when the activities involve HSPs or other procedures which have not been developed within Building 371 operations organization is apparently not adequately robust.

OP3-2 The Building 371 pre-evolution briefs were often deficient and therefore do not ensure that the workers are aware of hazards and will properly implement controls prior to commencement of work.

OP3-3 Building 664 line management does not have an adequate understanding of building fire protection safety systems.

MG1.1A-1 Building 371 managers are not fully conversant with the selection of hazards analysis techniques used to perform work. Use of EWP, JHA, or the provisions of the IWCP were not fully understood.